INTRODUCTION

Progressive mental deterioration in old age has been known and described for a long time. However, it was not until 1906 that a German physician, Dr. Alois Alzheimer, specifically identified a collection of brain cell abnormalities as a disease. After his contributions, the medical community recognized Alzheimer's as a disease and not a normal part of aging. Over the last decade, scientists have substantially progressed in understanding potential environmental, genetic and other risk factors for Alzheimer Disease (AD), the processes leading to formation of plaques and tangles in the brain, and the brain regions that are affected. Specific genes related to both the early-onset and late-onset forms of AD have been identified, but genetic risk factors only do not fully explain its causes, so researchers are actively exploring environment and lifestyle to learn what role they might play in the development of this disease. However, AD is still incurable. The drugs currently in use treat only the symptoms, not the cause of the disorder, and they only slow the progression of cognitive decline.
Early Years  Alois Alzheimer was born on 14 June 1864 in Marktbreit-am-Main, Bavaria. Following secondary studies in Aschaffenburg, he studied medicine at the Universities of Berlin, Tübingen and Würzburg, where he took his MD degree in 1887. His thesis was called “On the Ceruminal Glands of the Ear” and his supervisor was the famous histologist of the period, Albert von Kölliker (1817–1905). In 1888, he started to work at the “Städtische Anstalt für Irre und Epileptische” in Frankfurt am Main, the city asylum for “Lunatics and Epileptics”.(5)

There he worked with Emil Sioli (1852 - 1922) and Franz Nissl (1860 – 1919). Alzheimer's work on brain pathology used Nissl's method of silver staining of the histological sections of the brain. Nissl and Alzheimer became close collaborators and lifelong friends. They were clinicians by day and histopathologists by night. In other areas of medicine, histopathology had already succeeded in correlating disease symptoms with organic causes. Nissl and Alzheimer wanted to achieve the same in psychiatry through the use of microscopic analysis of the brain, with a major focus on the cerebral cortex. They believed that only if mental disorders could be clearly defined, would it become possible to understand and treat them. Nissl was mostly interested in developing novel methods and performing experimental studies, whereas Alzheimer's focus was on correlating psychiatric symptoms with histological results obtained from brain autopsies. He published a case report on progressive spinal muscular atrophy in 1891.(6)

Many years later, in his obituary of Alzheimer, Nissl described his time in Frankfurt as “the seven wonderful years that I spent working with Alzheimer. They were years of hard work, of learning and of striving, underpinned by an ideal friendship”.(4)

Alzheimer Disease  The story of Alzheimer's disease began on 25 November 1901, when Alzheimer admitted the 51-year-old Auguste D. as a patient. Over the previous year, she had experienced a marked decline in her ability to form new memories. She had developed a fear of people who were well known to her; she had also become paranoid and extremely jealous of her husband. Alzheimer followed Auguste D. until March 1903. In 1903, Alzheimer became the Assistant of Prof. Emil Kraepelin at the university clinics of psychiatry (Psychiatrische Universitätsklinik) in Heidelberg, whom he followed to Munich in 1904. Kraepelin was perhaps the most influential psychiatrist of his time; he was
of the founders of modern psychiatry, is best known for his seminal work on the nosology of schizophrenia (he called it dementia praecox) and manic-depressive illness.\(^{(2)}\)

Auguste D. died at the Frankfurt asylum on 8 April 1906. Alzheimer asked for her brain to be sent to Munich for analysis, where it arrived on 28 April. The work he carried out over the next 6 months was to make medical history. Alzheimer described his findings at the 37th meeting of the Society of Southwest German Psychiatrists in Tübingen on 3 November 1906. They were published in the short paper of 1907, which is essentially a transcript of the Tübingen talk, and in the more extensive article of 1911. The 1907 paper gives the clinicopathological description of Auguste D.'s illness. In her cerebral cortex, Alzheimer saw abundant plaques and neurofibrillary tangles using the reduced silver staining methods.\(^{(4)}\)

Alzheimer saw increased silver staining in many nerve cells of the cerebral cortex of Auguste D., which he attributed to an abnormal thickening of neurofibrils and their alignment into bundles (the term “neurofibril” survives to this day in the expression “neurofibrillary tangle”). They were found to survive the degeneration of nerve cells (as extracellular or ghost tangles). Alzheimer states that he could also stain these bundles with dyes that did not label normal neurofibrils, thus underscoring their pathological nature. Kraepelin separated the disease from senile dementia and named it after Alzheimer in the second volume of the 8th edition of his textbook of psychiatry.\(^{(4)}\)

**Personal Life** By all accounts, Alzheimer was a gentle and considerate man. Nissl described him as forti
ter in re, suaviter in modo (resolute in deed, gentle in manner). In his 1920 article about the lives of Alzheimer, Korbinian Brodmann (1868–1918) and Nissl, who all died young, Kraepelin provided a vivid portrait of Alzheimer as a very dedicated individual who worked without pay and only rarely took a break.\(^{(6)}\)

In 1894, Alzheimer had married Cäcilie Geisenheimer, the widow of a wealthy industrialist, with whom he had three children. Following his wife's early death in 1901, he became financially independent. In Munich, Alzheimer lived with his children and his sister in an apartment near the Clinic. From the 1880s onwards, the medical establishment in Germany (and several other countries) became increasingly preoccupied with social Darwinism, monism, theories of degeneration and racial hygiene.\(^{(9)}\) Psychiatrists played an important part in this movement. Racial hygiene was considered an applied science based on the

![Figure 3: A special cancellation from India](image-url)
laws of genetics which was necessary for improving the health of the population by preventing genetic defects. It was believed to be complementary to personal hygiene. At the root of racial hygiene lay a strong belief in biological determinism. The inherited nature of some disorders was already well known. In addition, more diffuse ideas of inheritance and degeneration gained in popularity, especially following the publication of the influential book *Traité des dégénérescences physiques, intellectuelles et morales de l'espèce humaine* (Treatise of the physical, intellectual and moral degeneration of the human species) by the French psychiatrist Bénédict Augustin Morel (1809–1873) in 1857. He believed that mental disorders were inherited in such a way that degeneracy was cumulative and that as a result a worsening of symptoms occurred in subsequent generations. What was present as nervousness in the first generation could manifest itself as neurosis in the second generation, psychosis in the third generation and mental retardation, physical deformity and sterility in the fourth generation. Over-consumption of alcohol, tobacco and opium was thought to weaken the genetic material and lead to degeneration. These ideas had a strong influence on the Italian psychiatrist Cesare Lombroso (1835–1909), who linked organic disease with social deviancy and put forward the concept of the “delinquente nato” (born criminal). Moral decadence, social deviancy, tuberculosis and venereal diseases were all seen as symptoms of hereditary degeneration. Alzheimer appears to have shared many of these views. They were also held in other walks of life and influenced some of the major literary works of the period, such as Henrik Ibsen's “Ghosts”, Emile Zola's cycle of novels “Les Rougon-Macquart”, Robert Louis Stevenson's “The Strange Case of Dr Jekyll and Mr Hyde”, Gerhart Hauptmann's “Vor Sonnenaufgang” (Before Sunrise) and Thomas Mann's “Buddenbrooks”.

It is against this background that one probably has to view Alzheimer's membership of the “Deutsche Gesellschaft für Rassenhygiene” (German Racial Hygiene Society). His name appears on the list of members for 1913, at a time when the Society was still in its infancy. On 9 January 1912, he lectured on the brain to an audience of 300 people for the Munich chapter of the Racial Hygiene Society. Unfortunately, many years after Alzheimer's death, the views espoused by the Racial Hygiene Society had a significant impact on Nazi ideology and a number of psychiatrists helped to prepare and implement some of the terrible events of the 1930s and 1940s.

![Figure 4: Special cancellation of a station for Alzheimer patients](image-url)
Death  Kraepelin believed that Alzheimer's heavy workload contributed to his early death. A bacterial infection that he contracted during the move from Munich developed into a subacute endocarditis, which weakened him physically and forced him to take lengthy breaks from work. In 1913, he organized the annual meeting of the German Society of Psychiatry in Breslau. Kraepelin, who saw Alzheimer there for the last time, noted that he no longer was the tower of strength he had been in Munich.\(^{(2)}\) By now, he was suffering from chronic heart and kidney problems. Alzheimer's physical decline coincided with the beginning of World War I, with ensuing deprivations, an increased workload and personal worries (both his son and son-in-law were drafted into the army). His condition worsened markedly during the second half of 1915. Alzheimer died in Breslau on December 19, 1915, aged 51 years. He was laid to rest next to this wife in Frankfurt's main cemetery.

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Received by: 30 October 2012  
Revised by: 26 November 2012

The Online Journal of Neurological Sciences (Turkish) 1984-2012  
This e-journal is run by Ege University Faculty of Medicine, Dept. of Neurological Surgery, Bornova, Izmir-35100TR  
as part of the Ege Neurological Surgery World Wide Web service. 
Comments and feedback: 
E-mail: editor@jns.dergisi.org  
URL: http://www.jns.dergisi.org  
Journal of Neurological Sciences (Turkish)  
Abbr: J. Neurol. Sci.[Turk]  
ISSNe 1302-1664

REFERENCES